**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1-56. (Cancelled)

57. (Previously Presented) A plurality of carbon nanosheets on a substrate, each of the plurality of carbon nanosheets having a thickness of 2 nanometers or less, wherein the plurality of carbon nanosheets are aligned and stand on their edges roughly vertically to the substrate.

58. (Previously Presented) The plurality of carbon nanosheets of claim 57, wherein:
the thickness is 1 nanometer or less; and
each of the plurality of carbon nanosheets comprises one to three graphene layers.

59. (Previously Presented) The plurality of carbon nanosheets of claim 58, wherein each of the plurality of carbon nanosheets comprises a single graphene layer.

60. (Previously Presented) The plurality of carbon nanosheets of claim 57, wherein:
the specific surface area of the each of the plurality of carbon nanosheets is between 1000 $m^2/g$ to 2600 $m^2/g$;
each of the plurality of carbon nanosheets has a height between 100 nm and 8 $\mu$m; and
the plurality of carbon nanosheets are in substantially pure form.

61. (Cancelled)

62. (Previously Presented) A composition comprising a plurality of carbon nanoflakes having a specific surface area between 1000 $m^2/g$ and 2600 $m^2/g$, wherein the carbon nanoflakes are aligned, freestanding and stand on their edges roughly vertically to a substrate.

63. (Previously Presented) The composition of claim 62, wherein each of the plurality of carbon nanoflakes has a thickness of 10 nanometers or less.

64. (Previously Presented) The composition of claim 63, wherein:

each of the plurality of carbon nanoflakes has a thickness of 2 nanometers or less; and

the specific surface area of the each of the plurality of carbon nanoflakes is between 2000 $m^2/g$ and 2600 $m^2/g$.

65. (Withdrawn) A method of making carbon nanoflakes comprising forming the nanoflakes on a substrate using RF-PECVD, wherein the carbon nanoflakes are aligned, freestanding and stand on their edges roughly vertically to the substrate and have a specific surface area between 1000 $m^2/g$ and 2600 $m^2/g$.

66. (Withdrawn) The method of claim 65, wherein RF-PECVD is inductively or capacitively coupled.

67. (Withdrawn) The method of claim 65, further comprising:

increasing the substrate temperature during nucleation phase of carbon nanoflake synthesis to form carbon nanosheets comprising a single graphene layer; and

attaching a grounding electrode to the substrate during a nucleation phase of nanoflake formation on the substrate.

68. (Withdrawn) The method of claim 65, wherein:

the substrate temperature is between 550 °C and 950 °C;

the PECVD chamber pressure is between 50 mTorr and 200 mTorr; and

PECVD plasma power is equal to or greater than 700 W.

69. (Withdrawn) The method of claim 65, wherein the CVD source gas comprises methane or acetylene, such that the CVD source gas contains a methane to hydrogen ratio between 0.05:99.95 and 100:0, or an acetylene to hydrogen ratio between 0.05:99.95 and 60:40.

70. (Withdrawn) A method of making carbon nanosheets, comprising:

forming the nanosheets on a substrate, wherein the carbon nanosheets are aligned and stand on their edges roughly vertically to the substrate; and

increasing the substrate temperature during a nucleation phase of carbon nanosheet formation.

71. (Withdrawn) The method of claim 70, wherein inductively or capacitively coupled RF-PECVD is used to form the nanosheets.

72. (Withdrawn) The method of claim 70, further comprising attaching a grounding electrode to the substrate during a nucleation phase of nanoflake formation on the substrate.

73. (Withdrawn) The method of claim 70, wherein:
the substrate temperature is between 550 °C and 950 °C;
the PECVD chamber pressure is between 50 mTorr and 200 mTorr; and
PECVD plasma power is equal to or greater than 700 W.

74. (Withdrawn) The method of claim 70, wherein the CVD source gas comprises methane or acetylene, such that the CVD source gas contains a methane to hydrogen ratio between 0.05:99.95 and 100:0, or an acetylene to hydrogen ratio between 0.05:99.95 and 60:40.

75. (Previously Presented) An article comprising the plurality of carbon nanosheets of claim 57, wherein the article is selected from a group consisting of a field emitter, a catalyst support, a hydrogen storage device, a sensor, a blackbody absorber, a composite material, and a coating.

76. (Previously Presented) An article comprising the plurality of carbon nanosheets of claim 62, wherein the article is selected from a group consisting of a field emitter, a catalyst support, a hydrogen storage device, a sensor, a blackbody absorber, a composite material, and a coating.

77-78. (Cancelled)

79. (Previously Presented) The plurality of carbon nanosheets of claim 57, wherein the carbon nanosheets comprise crystalline carbon nanosheets.

80. (Previously Presented) The plurality of carbon nanosheets of claim 62, wherein the carbon nanosheets comprise crystalline carbon nanosheets.